

REMARKS/ARGUMENTS

In the present application, claims 1-11 are pending. Claims 1-11 are rejected. By this amendment, claims 1, 8, 9, and 11 have been amended. New claims 12-15 have been added. No new matter has been added. As a result of this amendment, claims 1-15 are now believed to be in condition for allowance.

The support for the amendments to claims 1, 8, 9, and 11 may at least be found at page 2, lines 27 through page 3, line 3; page 5, line 21 through page 6, line 16 in Applicants' specification; and in the claims and figures as originally filed.

The support for new claims 12-15 may at least be found at page 5, line 33 through page 6, line 5; page 7, line 30 through page 8, line 14 in Applicants' specification; and in the claims and figures as originally filed.

The Examiner objected to the Abstract of the Disclosure because it does not contain that which is new (the electrode shape) since a two-step process is already well known (e.g. see U.S. Patent No. 4,762,464). Please also note that legal phraseology (e.g. the word "wherein") should not be used in the Abstract. See MPEP §608.01(b).

The Examiner rejected claim 11 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner rejected claim 11 under 35 U.S.C. §102(b) as being anticipated by Baker in U.S. Patent No. 4,850,147.

The Examiner rejected claims 1-7 and 10 under 35 U.S.C. §103(a) as being unpatentable over Vertz et al. in U.S. Patent No. 4,762,464 in view of Baker in U.S. Patent No. 4,850,147.

The Examiner rejected claims 8 and 9 under 35 U.S.C. §103(a) as being unpatentable over Vertz et al. in U.S. Patent No. 4,762,464 in view of Baker in U.S. Patent No. 4,850,147 as applied to claims 8 and 9 above, and further in view of Cross et al. in U.S. Patent No. 4,922,076.

Objection to Abstract of the Disclosure

The Abstract of the Disclosure because it does not contain that which is new (the electrode shape) since a two-step process is already well known (e.g. see U.S. Patent No. 4,762,464). Please also note that legal phraseology (e.g. the word "wherein") should not be used in the Abstract. See MPEP §608.01(b).

Applicants have amended the Abstract of the Disclosure to reflect "that which is new" as well as to remove the legal phraseology. Applicants believe the Abstract of the Disclosure is now in proper form and respectfully requests the Examiner withdraw his objection.

Rejections under 35 U.S.C. §112, second paragraph

The Examiner rejected claim 11 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has amended claim 11 to replace the language "an additional angle portion" with "a plurality of diffuser surfaces". Support for the amendment to claim 11 may at least be found at page 2, lines 27 through page 3, line 3; page 5, line 21 through page 6, line 16 in Applicants' specification and in the claims and figures as originally filed.

Applicants believe claim 11 is no longer indefinite and respectfully requests the Examiner withdraw his rejection under 35 U.S.C. §112, second paragraph.

Rejections under 35 U.S.C. §102

Claim 11 was rejected under 35 U.S.C. §102(b) as being anticipated by Baker in U.S. Patent No. 4,850,147.

The Examiner stated the following:

"Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Baker in U.S. Patent No. 4,850,147. Baker in figure 4c has an electrode with a nose extending to a point along a theoretical centerline, the nose being "capable" of forming a transition line."

(Office Action, page 2, paragraph 4).

Baker teaches that by suitable rotation of an electrode or the grinding element 9 an electrode shape similar to that of electrode 28 (See Figure 4c) can be produced (Col. 3, l. 68 through Col. 4, l. 3). The electrode 4 is an elongate electrode suitably made of rectangular-section copper strip...a nose portion 5 of each electrode 4 extends below the guide 1 [of the grinding unit 2] and it is these portions 5 which are shaped and subsequently used to erode flare holes or shaped cavities (See generally col. 2, ll. 34-40).

Unlike Applicants' amended claim 11, Baker fails to teach, suggest or motivate one skilled in the art to conceive of "an *electrode comb for providing diffusing holes comprising at least one nose extending to a point along a centerline, said nose comprising a plurality of diffuser surfaces capable of forming a transition region*". Moreover, Baker fails to contemplate or even motivate one of ordinary skill in the art to shape a nose portion of an electrode in order to form a diffuser having an

array of angled surfaces passing through a common nose point along a tooth centerline which when said electrode is applied a transition region forms between the metering hole and the diffuser hole that prevents the formation of a step in the Vehr hole.

Baker fails to contemplate an electrode having a "nose comprising a plurality of diffuser surfaces capable of forming a transition region", or a method of forming said electrode, and thus does not anticipate all of the elements of Applicants' amended claim 11.

Rejections under 35 U.S.C. §103(a)

Claims 1-7 and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Vertz et al. in U.S. Patent No. 4,762,464 in view of Baker in U.S. Patent No. 4,850,147.

In framing his rejection, the Examiner stated the following:

"Vertz et al. discloses using a two-step proecess of forming a metering hole and fabricating a diffuser hole. Vertz et al. does not disclose using an electrode comb comprising a tooth comprising a nose comprised of a plurality of diffuser surfaces intersecting at a point on the centerline, and at least one of the said plurality of diffuser surfaces truncated by an offset from the centerline. Baker teaches an electrode comb comprising a tooth comprising a nose comprised of a plurality of diffuser surfaces intersecting at a point on the centerline, and all of the said plurality of diffuser surfaces are truncated by an offset from the centerline, and that such an electrode does not create a stepped bore when machining a hole. It would have been obvious to adapt

Vertz in view of Baker to provide this created of a stepped bore."

(Office Action, page 3, paragraph 6).

As discussed above, Baker fails to teach, suggest or motivate one skilled in the art an electrode for use in a method for forming non-separating diffusers in a part, that is, "... at least one electrode comb comprising a tooth said tooth comprising a nose comprised of a plurality of diffuser surfaces intersecting at a point on a tooth centerline said plurality of diffuser surfaces each possessing a diffuser angle, and at least one of said plurality of diffuser surfaces truncated by an offset from the centerline," as recited in Applicants' amended claim 1.

Vertz et al. teaches a two-step procedure whereby a laser beam drills the holes very quickly and cost-effectively and whereby an EDM step is relied upon only to form the diffuser shape (See Abstract). As noted by the Examiner in framing his objection, Vertz et al. fails to disclose the electrode comb recited in Applicants' amended claim 1. As discussed above, Baker fails to correct the deficiencies of Vertz et al.

As a result, the combination of Vertz et al. in view of Baker fails to teach, suggest or motivate one skilled in the art all of the elements of Applicants' amended claim 1. Applicants' amended claim 1 and claims 2-7 and 10, ultimately depend upon amended claim 1, are patentable over and not obvious in light of Vertz et al. in view of Baker.

Claims 8 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Vertz et al. in view of Baker as applied

to claims 8 and 9 above, and further in view of Cross et al. in U.S. Patent No. 4,922,076.

In framing his objection, the Examiner stated the following:

"Cross et al. teaches a diffuser angle portion of 2-10 degrees (which of course includes 10 degrees) as being preferable to (see column 6, lines 5-12) for an electrode used to create holes in a blade of a jet engine. It would have been obvious to adapt Vertz in view of Baker and Cross et al. to provide this to optimize air flow through a blade of an jet engine."

(Office action, page 3, paragraph 7).

Cross et al. teaches an electrode for producing cone-shaped diffusion openings in the surface of gas cooled turbine components, such as airfoils, by means of electro-discharge machining (EDM) and to the method of forming such electrodes (col. 1, ll. 8-12).

Applicants' amended claims 8 and 9 ultimately depend from Applicants' amended independent claim 1. Unlike Applicants' amended claim 1, Cross fails to teach, suggest or motivate one skilled in the art to form *"at least one electrode comb comprising a tooth said tooth comprising a nose comprised of a plurality of diffuser surfaces intersecting at a point on a tooth centerline said plurality of diffuser surfaces each possessing a diffuser angle, and at least one of said plurality of diffuser surfaces truncated by an offset from the centerline"*. Cross et al. contemplates forming EDM electrodes of various combinations of shapes (col. 5, ll. 62-63). Cross et al. teaches that the forward section [of the electrode] can be of circular cross-section and the cone-like section [of the

electrode] can be of elliptical cross-section and/or can be tilted (col. 5, ll. 63-66). However, Cross et al. fails to motivate one skilled in the art to look beyond a circular cross-section or an elliptical cross-section and form a "*plurality of diffuser surfaces each possessing a diffuser angle and at least one of said plurality of diffuser surfaces truncated by an offset from the centerline;*" as recited in Applicants' amended claim 1 in order to prevent forming a step and degrading the "Vehr" hole produced. Cross et al. fails to teach, suggest or motivate all of the elements of Applicants' amended claim 1 and, likewise, all of the elements of Applicants amended claims 8 and 9.

Cross et al. fails to correct the deficiencies present in both Baker and Vertz et al. As a result, the combination of Vertz et al. in view of Baker as applied to claims 8 and 9 above, and further in view of Cross et al. fails to teach, suggest or motivate one skilled in the art all of the elements of Applicants' amended claims 8 and 9. Applicants' amended claims 8 and 9, ultimately dependent upon amended claim 1, are patentable over and not obvious in light of Vertz et al. in view of Baker as applied to claims 8 and 9 above, and further in view of Cross et al.

Conclusion

An earnest and thorough attempt has been made by the undersigned to resolve the outstanding issues in this case and place same in condition for allowance. If the Examiner has any questions or feels that a telephone or personal interview would be helpful in resolving any outstanding issues which remain in this application after consideration of this amendment, the

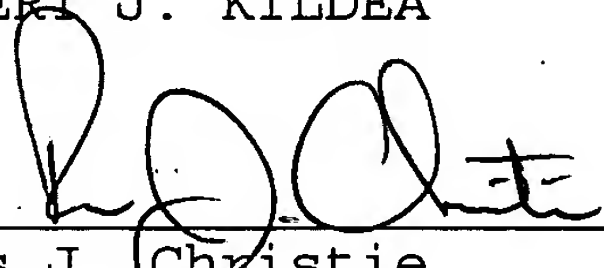
Examiner is courteously invited to telephone the undersigned and the same would be gratefully appreciated.

It is submitted that the claims herein patentably define over the art relied on by the Examiner and early allowance of same is courteously solicited.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 21-0279.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on November 2, 2004.


Antoinette Sullo